



Coastal cities threatened by sea level rise, as land sinks

Coastal cities across the world are increasingly threatened by sea levels rising, as a team of researchers have found sinking land in these locations could be exacerbating the problem.

The international group of scientists studied satellite images of 48 cities from 2014 to 2020 using a processing system and found a median sinking speed of 16.2 mm per year.

In some cities, land was sinking at an even faster rate of 43 mm per year, while the global mean sea level rise is 3.7mm each year.

Co-author of the study Emma Hill, Professor of Earth Sciences and Acting Chair of the Asian School of the Environment (ASE) at NTU Singapore, said: 'In coastal areas, sinking land leads to higher sea level and an increased flood risk. Our findings enable affected communities and policymakers to identify which areas are at particular risk from high levels of land subsidence and take action to address their coastal risks.'



The researchers, from NTU Singapore, University of New Mexico, ETH Zürich, and NASA's Jet Propulsion Lab, believe this land sinking could be worsened by industrial processes like oil, gas, and groundwater extraction.

Rapid construction of buildings and vital infrastructure could also be contributing to the problem.

Cities were selected based on their population size, with each place having a minimum population of five million in 2020, and location, with each area 50 kilometers away from the coast at a maximum.

Additionally, scientists discovered that land sinking was worse in cities in Asia, with the fastest land descent concentrated in this region.

First author, Ms Cheryl Tay, a PhD student at NTU's ASE and the Earth Observatory of Singapore (EOS), said: 'Rapid sinking of the land is frequently caused by groundwater extraction. This is concerning in Asia where many coastal cities are now centres of growth, and there is high demand for groundwater extraction to meet the water needs of growing populations.

'By estimating how much and how fast these densely populated coastal cities are subsiding, our study helps constrain projections of coastal flooding in the coming

decades, as we expect more land to be flooded due to rising sea levels and land subsidence.'

Photo by Manson Yim

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